

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PA/LGE/03925</b>	FOR FURTHER ACTION      see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/KR 2003/002419</b>	International filing date (day/month/year) <b>11 November 2003 (11.11.2003)</b>	(Earliest) Priority Date (day/month/year)
Applicant <b>LG ELECTRONICS INC.</b>		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.: 3

☐ as suggested by the applicant.

☐ None of the figures.

☐ because the applicant failed to suggest a figure.

☒ because this figure better characterizes the invention.

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## Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A driving controlling apparatus of a linear compressor and a method thereof are disclosed in which a stroke is variably controlled at the time of a compression processing and a suction processing thus to prevent a consumption power decrease and a refrigerating capacity deficiency phenomenon and to enhance a reliability (v.u.). A driving controlling method of a linear compressor, wherein a firing angle is respectively applied at the time of a compression processing and a suction processing according to a load state.

The driving controlling apparatus comprises an electric circuit unit (20) for driving a linear compressor by varying a stroke by a piston movement; a voltage/current detecting unit (21) for detecting a voltage and a current generated at the electric circuit unit (20), a phase difference detecting unit (22) for receiving a voltage and a current from the voltage/current detecting unit (21) and thus detecting a voltage /current phase difference of a corresponding time point; and a stroke controlling unit (23) for receiving a phase difference from the phase difference detecting unit (22) and applying a stroke voltage to the electric circuit unit by differently applying a firing angle at the time of a compression processing and a suction processing, respectively on the basis of the input phase difference.

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## CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup>: F04B 35/04, 49/06; F25B 1/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup>: F04B, F25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2001/054253 A1 (LG ELECTRONICS) 26 July 2001 (26.07.2001) <i>claims 1-10; fig. 4-9.</i>	1,7,9
A	US 2003/0177773 A1 (KIM) 25 September 2003 (25.09.2003) <i>claims 1,4,12; fig. 4-7.</i>	7,9
A	US 6527519 B2 (HWANG et al) 4 March 2003 (04.03.2003) <i>claims 1,12; fig. 2-5.</i>	7,9
A	US 2003/0026702 A1 (YOO et al) 6 February 2003 (06.02.2003) <i>fig. 2-7; claims 1,8,13.</i>	7,9

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

### \* Special categories of cited documents:

„A“ document defining the general state of the art which is not considered to be of particular relevance

„E“ earlier application or patent but published on or after the international filing date

„L“ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

„O“ document referring to an oral disclosure, use, exhibition or other means

„P“ document published prior to the international filing date but later than the priority date claimed

„T“ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

„X“ document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

„Y“ document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

„&“ document member of the same patent family

Date of the actual completion of the international search

9 July 2004 (09.07.2004)

Date of mailing of the international search report

13 August 2004 (13.08.2004)

Name and mailing address of the ISA/AT

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Reference signs in parentheses should be inserted in the claims to increase their intelligibility (Rule 6.2b PCT).

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
**PCT/KR 03/02419-0**

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
US	A	20030026 702				none	
US	A	20030177 773				none	
US	B	6527519	2003-03-04	KR	A	2002041983	2002-06-05
				KR	A	2002041982	2002-06-05
				BR	A	0105524	2002-09-24
				JP	A	2002213367	2002-07-31
				CN	A	1356473	2002-07-03